AIR RESOURCES BOARD

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PROCEDURE FOR THE MANAGEMENT OF FUEL ANALYSIS DATA

SOP No. MLD 135

Version 2.1

Fuel Analyis and Methods Evaluation Section
Southern Laboratory Branch
Monitoring and Laboratory Division
Air Resources Board

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1.0   Introduction

1.1   The Fuel Analysis and Method Evaluation Section (FAMES) of the Monitoring and Laboratory Division performs various analyses on gasoline and diesel fuels. This document describes the generation and storage of the analytical data. It also describes the review and approval process for the release of the data. All analyses are done in support of programs for client divisions and agencies as needed.

1.2   Each analysis generates hard copies and/or electronic files. The data are then converted to the appropriate reporting formats and are subsequently stored. For clients other than Enforcement Division (ED), a data coordinator compiles the results from individual analyses prior to management's approval. The section manager or acting manager reviews and approves the release of the data.

1.3   Data generated for ED is submitted directly by the individual analysts to the inspection coordinator.

2.0   Sample analyses

2.1   Gasoline Samples

2.1.1   Gasoline samples are received from the Mobile Source Operations Division (MSOD), Mobile Source Control Division (MSCD), ED, or other clients. The detailed sample login protocol is described in SOP MLD No. 122.

2.1.2   Below is a list of gasoline analyses performed by FAMES:

1. RVP (SOP MLD 125)
2. DISTILLATION (SOP MLD 128)
3. DENSITY (SOP MLD 126)
4. TOTAL AROMATICS (SOP MLD 121)
5. OXYGENATES (SOP MLD 115)
6. DETAILED HYDROCARBON ANALYSIS (SOP MLD 118)
7. OLEFINS (SOP MLD 131 and 134)
8. SULFUR (SOP MLD 123 and130)
9. GASOLINE SCREENING (SOP MLD 133)
10. CARBON/HYDROGEN/OXYGEN FRACTION (SOP MLD131)

2.2   Diesel Samples

2.2.1   Diesel samples are received from MSOD, MSCD, ED, or other sources. The detailed sample login protocol is described in SOP MLD No. 122.

2.2.2   Below is a list of diesel analyses performed by FAMES:

1. DIESEL AROMATICS (SOP MLD 117)
2. SULFUR (SOP MLD 123 and130)
3. RED DYE IN DIESEL (SOP PENDING)
4. DIESEL SCREENING (SOP MLD 133)

3.0   General Protocol for Managing and Releasing Data

3.1   Each analysis generates hard copies and/or electronic files. The data are converted to the appropriate reporting format and stored. The procedure for releasing data is different depending on the source of the samples

3.2   Data from in-house samples

3.2.1   After the data have been collected, the analyst reviews the results for errors. If necessary, the data are corrected. Then the analyst tabulates the results on a spreadsheet.

3.2.2   The tabulated results are given to the Data Coordinator. The Coordinator reviews and compiles all results for the sample(s). Then the results are submitted to the section manager for approval and subsequently released.

3.3   Data from Enforcement Division samples.

3.3.1   After the data has been collected, the analyst tabulates the results on a spreadsheet.

3.3.2   The data are then reviewed by the analyst, making certain that all QC criteria are met, and reported directly to the Enforcement Division inspection coordinator.

4.0   General Data Storage

4.1   Storage of data can vary depending on the instrument. Certain analyses can generate a hard copy only and others can store data in electronic format. Storage of data generally falls within two categories, hard copy storage and electronic format storage.

4.2   Storage of hard copy data

4.2.1   Software generated hard copies of data are stored in Manila folders
        labeled with the name of the analysis and the date of the analysis.

4.2.2   The files are then stored in archive boxes kept in the laboratory for at least
        two years. The files are then sent to archive in Sacramento where they
        are stored for at least ten years.

4.3   Storage of electronic data

4.3.1   Software-generated data are stored in files on the hard drive of the
        instrument PC. The files are periodically copied onto MLD's file server for
        backup. The data files on the server are backed up onto compact disks
        annually and deleted from the server. These compact disks are stored in
        the office of the data coordinator.

4.3.2   Data files are generally named by sample name and analysis date for
        easy reference.

5.0   Specific Data Collection and Management for Individual Analyses

5.1   Data generated by Grabner Reid Vapor Pressure Analysis

5.1.1   This section applies to the Determination of Reid Vapor Pressure
        Equivalent of Gasoline [SOP MLD 125].

5.1.2   Due to the limited memory capabilities of the Grabner minivaps, the data
        can only be stored temporarily on the instrument. The results are printed
        out after the analysis is completed.

5.1.3   The hard copies are submitted to the appropriate coordinator. Only hard
        copies are available for archive.

5.2   Data generated by Herzog automated distillation instrument.

5.2.1   This section applies to the Determination of Distillation Points of Liquid
        Fuels by Automated Distillation [SOP MLD 128]

5.2.2   Data is generated by Herzog automated distillation software.

5.2.3   Data generated by this instrument are stored in a single database file.
        This file is stored on the hard drive of the data collection PC.

5.2.4   Hard copies of the results are printed out by the analyst.

5.2.5   The analyst evaluates the results for errors.

5.2.6   Once evaluated, the results are tabulated in a spreadsheet and submitted to the Data Coordinator.

5.3   Data generated by the digital density meter.

5.3.1   This section applies to the Determination of Density of Liquid Fuels [SOP MLD126].

5.3.2   Data results are displayed by a digital readout. The results are written in the instrument notebook.

5.3.3   There is no electronic format storage for this instrument. Hard copies are unavailable except in the form of a notebook. All results are hand written into the density meter notebook.

5.4   Data generated by chromatography methods.

5.4.1   This section applies to the following methods:

- Determination of Benzene and Total Aromatics by Gas Chromatography (GC) [SOP MLD 121]

- Determination of Ethers and Alcohol in Gasoline by Gas Chromatography (GC) [SOP MLD 115]

- Detailed Hydrocarbon Analysis of Gasoline by Single High Efficiency (CAPILLARY) Column Gas Chromatography). [SOP MLD 118]

- Determination of Olefins in Gasoline by Reformulyzer [SOP MLD 131]

- Determination of Olefins in Gasoline by Supercritical Fluid Chromatography and Flame Ionization Detector [SOP MLD 134]

- Procedure for the Analysis of Polynuclear Aromatic Hydrocarbons and Total Aromatic Hydrocarbon in Diesel Fuels by Super Critical Fluid Chromatography and Flame Ionization Detector. [SOP MLD 117]

5.4.2   Data files are generated by Varian Star, Hewlett Packard Chemstation, EZ Chrom, or Berger Chemstation software.

5.4.3 For Varian Star and EZ Chrom, the data files are named according to the date of analysis and the sample number. For Chemstation, the data files are named by the vial and sequence numbers. These files are stored on the hard drive of the data collection PC.

5.4.4 Hard copies of the results are printed out by the analyst.

5.4.5 The analyst evaluates the printed results and notes any corrections on the hard copy.

5.4.6 Once the corrections are made, the results are tabulated in a spreadsheet and submitted to the appropriate Coordinator.

5.4.7 The hard copies are kept in a folder labeled with the name of the analysis and the date on which the samples were run. The folders are filed in chronological order. Data in electronic format are stored on the hard drive of the instrument PC.

5.5 Data generated by UV Fluorescence

5.5.1 This section applies to SOP MLD 123.

5.5.2 Data are generated by the Antek software program.

5.5.3 The data files are named according to the date and sample ID. These files are stored on the hard drive of the instrument PC.

5.5.4 Hard copies of the result tables are printed out by the analyst.

5.5.5 The analyst evaluates the results and applies a density correction. Then the raw data, densities, and corrected concentrations are entered into a notebook. The results are tabulated on a spreadsheet.

5.5.6 The hard copies are kept in a folder labeled with the name of the analysis and the date on which the sample was run. Then the folders are filed in chronological order. Data in electronic format are stored on the hard drive of the instrument PC.

5.6 Data generated by X-ray Spectrometry

5.6.1 This section applies to SOP MLD 130.

5.6.2 Data is generated by the Oxford MPAS software.

5.6.3 The results are stored on the instrument PC and a hard copy is printed.

5.6.4   Then the results are manually entered into a spreadsheet and submitted to the Data Coordinator.

5.6.4   The hard copies are filed by date.

5.7   Data generated by UV/VIS Spectrometry

5.7.1   This section applies to red dye analysis of diesel fuel. There is no SOP written for this method. The method being used is adopted from a procedure being drafted by ASTM.

5.7.4   The Cary WinUV software generates a single peak spectrum. The red dye concentration is obtained by applying the second derivative to the single peak spectra.

5.7.5   Then the final concentrations are tabulated into a spreadsheet and submitted to the Data Coordinator.

5.7.6   Data in electronic format are stored on the hard drive of the instrument PC.

6.0   Revision History

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